

REMARKS

The Office Action dated September 29, 2005 has been carefully considered. Claims 1-7, 14-29, 34-36, and 41-43 are pending. The above amendments and the following remarks are presented in a sincere attempt to place this Application in condition for allowance. Claims 1, 14, 21, 23, 34, and 41 have been amended, and Claims 8-13, 22, 30-33, and 37-40 have been cancelled in this Response. Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Claims 1-13, and 30-33 stand rejected under 35 U.S.C. § 102(b) in view of U.S. Patent 4,344,479 to Bailey ("Bailey"). Insofar as these rejections may be applied against the amended claims they are deemed overcome. Claims 8-13 and 30-33 have been cancelled in this Response. Applicants submit that the rejections of these claims are moot.

Claim 1 has been amended to clarify a distinguishing feature of the present invention. The apparatus of amended Claim 1 comprises a processing unit, *"wherein the processing unit: evaluates a comparison of the energy output to the fan with the angular speed of the fan at a first time and a second time; and compares the comparison at the first time with the comparison at the second time to determine fan failure of fan wear."* Support for this amendment can be found, among other places, on page 6, lines 8-16, and page 9, line 13 through page 10, line 9 of the original Application.

The Bailey reference does not teach, suggest, or disclose this feature of the present invention. Specifically, Bailey discloses an apparatus for stirring fluids through the use of multiple fan motors. Accordingly, a feedback approach is used to sense the flow rate of the fluids and adjust the fan motors to achieve a desired flow rate. In contrast with Bailey, the present invention can determine fan failure or fan wear. Detecting fan failure or fan wear enables an operator to

determine when a fan needs to be repaired or replaced. This feature of the present invention is clearly not disclosed by Bailey.

In view of the foregoing, it is apparent that the cited reference does not disclose, teach, or suggest the unique combination now recited in amended Claim 1. Applicants therefore submit that amended Claim 1 is both clearly and precisely distinguishable over the cited reference in a patentable sense. Accordingly, Applicants respectfully request that the rejection of Claim 1 under 35 U.S.C. § 103(a) in view of Bailey be withdrawn and that amended Claim 1 be allowed.

Claims 2-7 depend upon and further limit amended Claim 1. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Accordingly, Applicants respectfully request that the rejections of dependent Claims 2-7 also be withdrawn.

Claims 14-29, 34-36, and 41-43 stand rejected under 35 U.S.C. § 103(a) in view of Bailey, U.S. Patent 4,536,689 to Davidson ("Davidson"), and U.S. Patent 4,839,852 to Knutsen ("Knutsen"). Insofar as these rejections may be applied against the amended claims they are deemed overcome. Claim 22 has been cancelled in this Response. Applicants submit that the rejection of this claim is moot.

Claim 14 has been amended to clarify a distinguishing feature of the present invention. The apparatus of Claim 14 comprises a processing unit a processing unit, *"wherein the processing unit: evaluates a comparison of the energy output to the fan with the angular speed of the fan at a first time and a second time; and compares the comparison at the first time with the comparison at the second time to determine fan failure or fan wear."* Support for this amendment can be found, among other places, on page 6, lines 8-16, and page 9, line 13 through page 10, line 9 of the original Application.

The Bailey, Davidson, and Knutsen references do not teach, suggest, or disclose this feature of the present invention. Specifically, Bailey discloses an apparatus for stirring fluids through the use of multiple fan motors, wherein a feedback approach is used to sense the flow rate of the fluids and adjust the fan motors to achieve a desired flow rate. Davidson discloses a motor feedback detector that combines motor drive voltage, the current flowing through the motor, and the rotational speed of the motor to produce a signal and compares this signal to a threshold. Knutsen discloses a programmable controller which includes a processor unit.

In contrast with the cited references, the present invention comprises a processing unit wherein an energy output/fan rotation speed measurement is made at a first time and a second time to indicate the behavior of a fan motor over a period of time. By evaluating the specifics of the fan motor over time, the processing unit can provide an accurate determination of fan failure. Accordingly, the processing unit can create a historical trend monitor for each fan motor. This feature is significant because each fan can consume varying amounts of energy, and a fan failure determination is different for each specific fan. Furthermore, the processing unit can determine relative fan failure over a period of time. Davidson determines motor failure by comparing the signal described above to a dynamic threshold, but the dynamic threshold is only based upon the conditions placed upon the motor and it only provides for rapid failure detection. The dynamic threshold of Davidson is significantly different than the energy output/fan rotation speed comparisons accomplished by the present invention. Accordingly, a dynamic threshold that relates to conditions placed on a motor cannot be utilized to evaluate the specifics of the fan motor over time. The cited references in combination do not disclose an apparatus with these features.

In view of the foregoing, it is apparent that the cited references do not disclose, teach or suggest the unique combination now recited in amended Claim 14. Applicants therefore submit that

amended Claim 14 is both clearly and precisely distinguishable over the cited references in a patentable sense. Accordingly, Applicants respectfully request that the rejection of Claim 14 under 35 U.S.C. § 103(a) in view of Bailey, Davidson, and Knutsen be withdrawn and that amended Claim 14 be allowed.

Claims 15-20 depend upon and further limit amended Claim 14. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Accordingly, Applicants respectfully request that the rejections of dependent Claims 15-20 also be withdrawn.

Claims 21, 23, 34, and 41 have been amended to clarify a similar distinguishing feature as amended Claim 14. Claim 21 has been amended to clarify a distinguishing feature of the present invention. The apparatus of Claim 21 “*predicts fan failure [by] using historical data of the energy output to the fan with the angular speed of the fan to determine if energy consumption is increasing.*” Support for this amendment can be found, among other places, on page 6, lines 8-16, and page 9, line 13 through page 10, line 9 of the original Application.

In contrast with the cited references, the present invention utilizes historical data of the energy output to the fan and the angular speed of the fan to predict fan failure or the degree of fan wear. By evaluating the specifics of the fan motor over time, the apparatus can provide an accurate determination of fan failure. Accordingly, the apparatus can create a historical trend monitor for each fan motor. This feature is significant because each fan can consume varying amounts of energy, and a fan failure determination is different for each specific fan. Furthermore, the apparatus can predict relative fan failure over a period of time. Davidson determines motor failure by comparing the signal described above to a dynamic threshold, but the dynamic threshold is only based upon the conditions placed upon the motor and it only provides for rapid failure detection.

The dynamic threshold of Davidson is significantly different than the energy output/fan rotation speed comparisons accomplished by the present invention. Accordingly, a dynamic threshold that relates to conditions placed on a motor cannot be utilized to evaluate the specifics of the fan motor over time or to predict impending fan failure or fan wear. The cited references in combination do not disclose an apparatus with these features.

In view of the foregoing, it is apparent that the cited references do not disclose, teach or suggest the unique combination now recited in amended Claim 21. Applicants therefore submit that amended Claim 21 is both clearly and precisely distinguishable over the cited references in a patentable sense. Accordingly, Applicants respectfully request that the rejection of Claim 21 under 35 U.S.C. § 103(a) in view of Bailey, Davidson, and Knutsen be withdrawn and that amended Claim 21 be allowed.

Claims 23, 34, and 41 have been amended to clarify a similar distinguishing feature as amended Claim 21. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Specifically, the cited references do not disclose the feature of evaluating an energy output/fan rotation speed measurement over time to predict impending fan failure or fan wear. Accordingly, Applicants respectfully request that the rejections of Claims 23, 34, and 41 under 35 U.S.C. § 103(a) in view of Bailey, Davidson, and Knutsen be withdrawn and that amended Claims 23, 34, and 41 be allowed.

Claims 24-29 depend upon and further limit Claim 23. Claims 35-36 depend upon and further limit Claim 34. Claims 42-43 depend upon and further limit Claim 41. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Accordingly, Applicants respectfully request that the rejections of dependent Claims 24-29, 35-36, and 42-43 also be withdrawn.

Applicants have now made an earnest attempt to place this Application in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicants respectfully request full allowance of Claims 1-7, 14-21, 23-29, 34-36, and 41-43.


Applicant hereby requests an extension of time for making this reply and hereby authorizes the Examiner to charge the required fee to Deposit Account No. 50-0605 of CARR LLP. Applicant does not believe that any other fees are due; however, in the event that any other fees are due, the Commissioner is hereby authorized to charge any required fees due (other than issue fees), and to credit any overpayment made, in connection with the filing of this paper to Deposit Account No. 50-0605 of CARR LLP.

Should the Examiner deem that any further amendment is desirable to place this Application in condition for allowance, the Examiner is invited to telephone the undersigned at the number listed below.

Respectfully submitted,

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